

I. AMENDMENTS

A. In the Claims

Please cancel claims 52 to 74 and 82 to 119 without prejudice. Upon entry of the present amendment, the status of the claims will be as follows:

1. (Original) A method of detecting expression of genes in the skin, comprising:
 - a) applying an adhesive tape to a target area of the skin in a manner sufficient to isolate an epidermal sample adhering to the adhesive tape, wherein the epidermal sample comprises nucleic acid molecules, wherein the tape comprises a rubber adhesive, and wherein the tape is pliable; and
 - b) detecting the nucleic acid molecules in the epidermal sample, thereby detecting expression of genes in the skin.
2. (Original) The method of claim 1, wherein the tape comprises a rubber adhesive on a polyurethane film.
3. (Original) The method of claim 1, wherein about one to ten adhesive tapes are applied and removed from the skin.
4. (Original) The method of claim 1, wherein about one to eight adhesive tapes are applied and removed from the skin.
5. (Original) The method of claim 1, wherein about one to five adhesive tapes are applied and removed from the skin.
6. (Original) The method of claim 1, wherein the nucleic acid molecules are applied to a microarray to detect the nucleic acid molecules.

7. (Original) The method of claim 1, wherein altered expression is detected by detecting a difference in a ΔC_t value, wherein a ΔC_t value is a difference in the number of amplification cycles required to reach a threshold signal level between a target nucleic acid molecule and a control nucleic acid molecule.

8. (Original) A method for detecting a response of a subject to treatment for a skin disease or pathological skin state, comprising:

- a) treating the subject for the skin disease or pathological skin state;
- b) applying an adhesive tape to the skin of the subject in a manner sufficient to isolate an epidermal sample, wherein the epidermal sample comprises nucleic acid molecules; and
- c) detecting a target nucleic acid molecule in the sample comprising nucleic acid molecules, wherein expression of the target nucleic acid molecule is informative regarding the skin disease and pathological skin states, thereby detecting a response of the subject to treatment for the skin disease or pathological skin state.

9. (Original)The method of claim 8, wherein the method is performed prior to treatment and after treatment.

10. (Original)The method of claim 9, wherein the skin disease or pathological skin state is psoriasis.

11. (Original)The method of claim 10, wherein the target nucleic acid molecule encodes a protein selected from $TNF\alpha$, $IFN\gamma$, IL-12B, NPF, or IL-23B

12. (Original)The method of claim 10, wherein the target nucleic acid molecule encodes a protein selected from CD2, $TNF\alpha$, or $IFN\gamma$.

13. (Original) The method of claim 12, wherein a decrease in expression of the target nucleic acid molecule after treatment compared to before treatment is indicative of positive response to treatment.

14. (Original) The method of claim 9, wherein a population of genes are detected.

15. (Original) The method of claim 14, wherein the detection is performed using a microarray.

16. (Original) The method of claim 9, wherein the skin disease or pathological skin state is dermatitis.

17. (Original) The method of claim 16, wherein the target area of the skin is irritated skin.

18. (Original) The method of claim 17, wherein the method detects expression of a keratin 10, keratin 16, or keratin 17 gene product, and wherein an increase in expression is indicative of response to the treatment.

19. (Original) The method of claim 17, wherein the method detects expression of a keratin 16 or keratin 17 gene product, and wherein an increase in expression is indicative of response to treatment.

20. (Original) A non-invasive method for isolating or detecting nucleic acid molecules from an epidermal sample of a psoriatic lesion of a human subject, comprising:

- a) applying an adhesive tape to the psoriatic lesion of the subject in a manner sufficient to isolate an epidermal sample adhering to the adhesive tape, wherein the epidermal sample comprises nucleic acid molecules; and
- b) isolating or detecting the nucleic acid molecule in the epidermal sample.

21. (Original) The method of claim 20, wherein the nucleic acid encodes For TNF α , IFN γ , CD2, IL-12B, Krt-16 and IL-23A.

22. (Original) The method of claim 21, wherein the nucleic acid encodes a protein selected from CD2, TNF α , and IFN γ .

23. (Original) The method of claim 20, wherein between one and ten adhesive tapes are applied to the skin and removed from the skin.

24. (Original) The method of claim 20, wherein between one and eight adhesive tapes are applied to the skin and removed from the skin.

25. (Original) The method of claim 20, wherein between about one and four adhesive tapes are applied to the skin and removed from the skin.

26. (Original) The method of claim 20, wherein the method further comprises taking a biopsy of the psoriatic lesion.

27. (Original) The method of claim 26, wherein a nucleic acid sample is obtained from the biopsy, and the nucleic acid from the tape sample and the nucleic acid from the biopsy are analyzed.

28. (Original) The method of claim 20, wherein the adhesive tape comprises a rubber adhesive.

29. (Original) The method of claim 20, further comprising obtaining a nucleic acid sample from uninvolved epidermal tissue of the human subject.

30. (Original) The method of claim 29, wherein the nucleic acid sample is obtained by taking a biopsy of the uninvolved skin.

31. (Original) The method of claim 29, wherein the nucleic acid from normal epidermal tissue is obtained by:

- a) applying an adhesive tape to skin of the subject in a manner sufficient to isolate an epidermal sample adhering to the adhesive tape, wherein the epidermal sample comprises nucleic acid and wherein the skin is unaffected by a disease to be tested; and
- b) isolating or detecting the nucleic acid from the epidermal sample of the unaffected skin.

32. (Original) The method of claim 30, wherein the uninvolved skin is from the upper arm or the upper back.

33. (Original) The method of claim 20, wherein the nucleic acid is deoxyribonucleic acid (DNA).

34. (Original) The method of claim 20, wherein the nucleic acid is ribonucleic acid (RNA).

35. (Original) The method of claim 20, wherein the skin is irritated skin.

36. (Original) The method of claim 20, wherein altered expression of the target nucleic acid is detected by detecting a difference in a ΔC_t value before and after treatment, wherein a ΔC_t value is a difference in the number of amplification cycles required to reach a threshold signal level between a target nucleic acid molecule and a control nucleic acid molecule.

37. (Original) A method for characterizing psoriasis in a subject, comprising:

a) applying an adhesive tape to a lesion suspected of being a psoriatic lesion on the skin of the subject in a manner sufficient to isolate an epidermal sample adhering to the adhesive tape, wherein the epidermal sample comprises a target nucleic acid molecule; and

b) detecting the target nucleic acid molecule, wherein the target nucleic acid is different in at least some subjects with psoriasis.

38. (Original) The method of claim 37, wherein the target nucleic acid molecule encodes a protein selected from CD2, TNF α , or IFN γ .

39. (Original) The method of claim 37, further comprising using the characterizing to determine a choice of treatment or whether to continue treatment.

40. (Original) The method of claim 37, wherein an expression profile is detected using a microarray.

41. (Original) The method of claim 37, further comprising determining a ΔC_t value, wherein a ΔC_t value is a difference in the number of amplification cycles required to reach a threshold signal level between a target nucleic acid molecule and a control nucleic acid molecule.

42. (Original) A method for diagnosing psoriasis in a human subject, comprising:
- a) applying an adhesive tape to a lesion suspected of being a psoriatic lesion on the skin of the subject in a manner sufficient to isolate an epidermal sample adhering to the adhesive tape, wherein the epidermal sample comprises a target nucleic acid molecule; and
 - b) detecting the target nucleic acid molecule, wherein an altered expression of the target nucleic acid molecule as compared with expression in an epidermal sample from a sample not having psoriasis is indicative of psoriasis, thereby diagnosing psoriasis of the subject.

43. (Original) The method of claim 42, wherein the target nucleic acid molecule encodes a protein selected from $\text{TNF}\alpha$, $\text{IFN}\gamma$, CD2, IL-12B, Krt-16 and IL-23A.

44. (Original) The method of claim 43, wherein two or more target nucleic acid molecules are detected.

45. (Original) The method of claim 44, wherein two or more target nucleic acid molecules that encode two or more proteins selected from CD2, $\text{TNF}\alpha$, or $\text{IFN}\gamma$, are detected.

46. (Original) The method of claim 42, wherein a biopsy is taken at the site of the skin.

47. (Original) The method of claim 46, wherein a nucleic acid sample is obtained from the biopsy.

48. (Original) The method of claim 46, wherein expression of a target nucleic acid molecule encoding a protein selected from CD2, $\text{TNF}\alpha$, or $\text{IFN}\gamma$, is detected.

49. (Original) The method of claim 42, wherein altered expression is detected by comparing expression of the target nucleic acid molecule with expression of a control nucleic acid molecule.

50. (Original) The method of claim 49, wherein expression of the target nucleic acid molecule and the control nucleic acid molecule are detected in the same experiment using the same sample volumes and probes.

51. (Original) The method of claim 50, wherein altered expression is detected by detecting a difference in a ΔC_t value, wherein a ΔC_t value is a difference in the number of amplification cycles required to reach a threshold signal level between the target nucleic acid molecule and a control nucleic acid molecule.

52 to 74. (Cancelled).

75. (Original) A method for identifying a pattern of nucleic acid molecule expression indicative of a disease or pathological state of a human subject, the method comprising:

a) applying an adhesive tape to an area of skin afflicted with the disease or pathological state and to an unaffected area, in a manner sufficient to isolate an epidermal sample adhering to the adhesive tape, wherein the epidermal samples comprise nucleic acid molecules;

b) applying RNA molecules obtained from the sample to a microarray; and

c) determining expression levels of at least 10 genes using the microarray;

wherein an altered expression level in the disease or pathological skin state sample for each of the at least 10 genes as compared with expression in the unaffected skin sample identifies skin afflicted with the disease or pathological state, thereby identifying the pattern of nucleic acid molecule expression indicative of the disease or pathological state.

76. (Original) The method of claim 75, wherein expression levels of at least 100 genes are determined on the microarray.

77. (Original) The method of claim 75, wherein expression levels of at least 1000 genes are determined on the microarray.

78. (Original) The method of claim 75, wherein expression levels of at least 10000 genes are determined on the microarray.

79. (Original) The method of claim 75, wherein about one to ten adhesive tapes are applied and removed from the skin.

80. (Original) The method of claim 75, wherein about one to eight adhesive tapes are applied and removed from the skin.

81. (Original) The method of claim 75, wherein one to five adhesive tapes are applied to the skin.

82 to 119. (Cancelled).